

Richmond Refinery LPS Bulletin – Reliability

FCC Shut Down Due To Operator Interface Module Failure and CP Set-Point change



IMPACT #:12592

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Outside OIM for operations use during daily monitoring and start up/shutdowns



Tenets of Operations Breached:

6 – Maintain integrity of dedicated systems

URIP

Design/Care/Fix/Prevent

Incident Description:

The Richmond FCC experienced an emergency shutdown on 4/24/2011 due to an outside Operator Interface Module (OIM) failure. The Reactor/Regenerator d/P set point changed from 5 psi to -1 psi. This caused a sudden drop in d/P across the regenerated slide valve, which triggered a Triconex shutdown. All Emergency systems functioned properly. The plant was started back up 36 hours after the trip. A 5-Why investigation was completed.

Investigation Findings:

1. The OIM in use was sent to the manufacturer (CCC) for testing. It was found to have a faulty set point controller on the face plate.
2. The OIM's are of an "aged" design and the entire system needs to be upgraded. There are limited spare parts.
3. The backup power supplied to the OIM's are called "black boxes" and it had also failed causing there to be no signal sent to the control house.
4. There is only 1 face plate for 9 OIM's in the Cracking ABU and new modules are not available.
5. The outside control systems did not have a PM or alarm test system set up to catch the failure of the black box. The signal to the house also failed.

Lessons Learned:

1. Verify that the OIM's and/or other critical equipment controllers are of a current design and have continued support from the manufacturer

Recommendations:

1. Upgrade CCC controls and hardware as soon as practical or at the next major turnaround.
2. Upgrade the OIM controls to use a PC with one control point and a view option rather than using multiple controllers in the field.
3. Keep all OIMs in "FTOS" (Fault Tolerant Operating System) mode (i.e., a blank screen rather than controller selected), which will minimize the risk of a similar failure causing a set-point change.
4. Upgrade power supplies or replace with newer equipment plus have a PM/testing program in place for backup power supplies.

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